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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/543,281	04/05/2000	Guolin Ma	D0532/7031-GSE	6483

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Gary S Engelson
Wolf Greenfield & Sacks
600 Atlantic Avenue
Boston, MA 02210

19
EXAMINER

FERGUSON, LAWRENCE D

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/543,281

Applicant(s)

MA ET AL.

Examiner

Lawrence D Ferguson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Request for Reconsideration

1. This action is in response to the request for reconsideration mailed June 16, 2003. Claims 1-31 are pending.

Claim Rejections – 35 USC § 103(a)

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5-6, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckingham et al. (U.S. 5,168,031) in view of Rosen et al. (U.S. 5,761,188).
4. Buckingham teaches the conventionality of air incidence and the recording layer ablated by an air-incident modulated laser beam (column 1, line 64 through column 2, line 1) having a low thermal conductivity for the optical recording medium (column 1, lines 46-51). Buckingham discloses an optical recording element comprising a substrate and a recording medium layer (column 3, lines 65-66) and a reflecting layer (column 8, line 64) that is metallic (column 9, lines 9-13). Buckingham discloses a spacer between the reflecting layer and the recording medium (column 9, lines 25-26) which is between

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the reflecting layer and the substrate. Buckingham discloses the spacer helping to control the thermal performance of the medium and having protecting properties (column 9, lines 26-28) where the spacer is a dielectric (column 9, lines 28-29).

Buckingham discloses a protective coating layer that can be made out of any material in contact with the recording layer or separated from it by an air gap (column 9, lines 51-62). This protective coating material is analogous to a lubricant. Buckingham discloses the recording medium is protected by an overcoat layer which is either in contact with the top surface of the recording medium or separated from it by a clean sealed air gap (claim 14). The recording layer exhibiting the Kerr effect is an experimental result and is therefore a product by process. Additionally, in claims 1 and 11, "a coating system of layers having a thermal conductivity that maintains the coating system of layers at a temperature that does not cause more evaporation during read and write operations of the same coating system of layers and of molecules adsorbed therein from an ambient atmosphere than absent the read and write operations" is directed to a product by process. "Even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 227 USPQ 964, 966. Buckingham does not explicitly disclose the separation between the recording layer and overcoat layer. However the spacer provides a

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separation between the recording layer and overcoat. Buckingham does not disclose a low thermal conductivity of a dielectric layer or protective layer.

Rosen teaches a multiple recording layer with a dielectric layer (column 2, lines 34-50), reflective layer (column 5, line 34) and protective layer (column 6, line 55). Rosen teaches a dielectric layer acting as a protective layer so the high temperature does not deform the substrate (column 7, lines 15-19). Rosen teaches layer having low thermal conductivity used for protecting the substrate from deformation (column 8, lines 23-27). Buckingham and Rosen are analogous art because they are from the same field of multilayer recording media. It would have been obvious to one of ordinary skill in the art to include the low thermal conductive properties of Rosen in the dielectric and protective layers of Buckingham because Rosen teaches that giving layers high thermal conductivity for heat dissipation purposes is known to the art.

Claim Rejections – 35 USC § 103(a)

5. Claims 1-5 and 7-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen et al. (U.S. 5,761,188) in view of Lee et al. (U.S. 5,729,393).

6. Rosen discloses a multiple recording layer phase-change optical disk with a substrate and dielectric layer (abstract). Rosen discloses a metallic heat dissipation reflective layer (column 5, lines 33-34) and an amorphous to crystalline phase (column 5, line 53). Rosen discloses a solid spacer layer formed by deposition such as spin coating along with a protective layer (column 6, lines 43-55). Rosen discloses a dielectric layer acting as a protective layer so high temperature does not deform the

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substrate (column 7, lines 15-19). Rosen discloses a recording layer composed of Ge, Sb and Te (column 7, line 43). Rosen discloses one or more additional layers, such as a heat dissipation layer (column 7, lines 49-51) that have reflective properties that aid in regulating the thermal conductivity. Rosen discloses layers having low thermal conductivity helping to protect the substrate from deformation (column 8, lines 23-27). The recording layer exhibiting the Kerr effect is an experimental result and is therefore a product by process. Additionally, in claims 1 and 11, "a coating system of layers having a thermal conductivity that maintains the coating system of layers at a temperature that does not cause more evaporation during read and write operations of the same coating system of layers and of molecules adsorbed therein from an ambient atmosphere than absent the read and write operations" is directed to a product by process. Utilizing evanescent coupling effects to decrease the spot size of the optical beam is an experimental result and is therefore a product by process. "Even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 227 USPQ 964, 966. Rosen does not disclose an air bearing assembly with sliding SIL and reduced spot size.

Lee teaches an air bearing assembly with a solid immersion lens (SIL) having a bottom surface facing the disk (column 1, lines 44-47) where the SIL is mounted to the slider (column 1, line 67). Lee discloses a flying slider (column 3, line 15) and reducing

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spot size (column 4, line 57). Rosen and Lee are analogous art because they are from the same field of recording mediums. It would have been obvious to one of ordinary skill in the art to incorporate the air bearing assembly with sliding SIL and reduced spot size of Lee to the recording medium of Rosen because Lee teaches that it is known in the art to incorporate this air bearing assembly with recording mediums.

7. Claim 21-31 are allowed

Response to Arguments

8. Examiner acknowledges Applicant's request for an interview; however, notes that Applicant is only entitled to one interview during prosecution of the case and an interview was previously held on March, 6, 2003.

The arguments in regards to rejection under 35 USC 103(a) as being unpatentable over Buckingham et al. (U.S. 5,168,031) in view of Rosen et al. (U.S. 5,761,188) have been considered but are unpersuasive. Applicant argues a "coating system of layers having a thermal conductivity that maintains the coating system of layers at a temperature that does not cause more evaporation during read and write operations of the same coating system of layers and of molecules adsorbed therein from an ambient atmosphere than absent the read and write operations" is not a process of forming the coating system of layers. Although this is not explicitly a process of making the coated system, it is directed to a process of maintaining the temperature of the system. Applicant states this language is functional language. Examiner

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respectfully disagrees because this language is not directed to the article itself, but to regulating the temperature of the coating system. Maintaining a temperature constitutes a 'capable of' limitation and that such a recitation that an element is 'capable of' performing a function is not a positive limitation but only requires the ability to so perform. Additionally, Buckingham discloses the spacer helping to control the thermal performance of the medium and having protecting properties (column 9, lines 26-28) along with a protective coating layer that can be made out of any material in contact with the recording layer or separated from it by an air gap (column 9, lines 51-62).

Applicant argues a prima facie case of obviousness has not been set forth with respect to the rejection over Buckingham in view of Rosen. It would have been obvious to one of ordinary skill in the art to include the low thermal conductive properties of Rosen in the dielectric and protective layers of Buckingham because Rosen teaches that giving layers high thermal conductivity for heat dissipation purposes is conventional.

Furthermore, Buckingham teaches the conventionality of air incidence and the recording layer ablated by an air-incident modulated laser beam (column 1, line 64 through column 2, line 1) having a low thermal conductivity for the optical recording medium (column 1, lines 46-51). It would have been obvious to one of ordinary skill in the art to include the low thermal conductive properties of Rosen in the dielectric and protective layers of Buckingham because Rosen teaches that giving layers high thermal conductivity for heat dissipation purposes is known to the art and because Buckingham already teaches the conventionality of a low thermal conductivity of the optical recording

medium, introducing coating layers having a low thermal conductivity for regulating heat dissipation would have been obvious, absent any evidence to the contrary.

Applicant argues the air incident recording media do not contain a substrate between the recording layer and the light incident surface. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., argues the air incident recording media do not contain a substrate between the recording layer and the light incident surface) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant argues one would not have been motivated to include a layer to protect a light incident substrate from deformation in a disk that does not include light-incident substrate. Applicant lacks sufficient support for this assertion.

The arguments in regards to rejection under 35 USC 103(a) as being unpatentable over Rosen et al. (U.S. 5,761,188) in view of Lee et al. (U.S. 5,729,393) have been considered but are unpersuasive. Applicant argues neither Rosen nor Lee teaches an air-incident optical recording medium. Lee teaches an air bearing assembly with a solid immersion lens (SIL) having a bottom surface facing the disk (column 1, lines 44-47) where the SIL is mounted to the slider (column 1, line 67) which is combined with Rosen to show 'An air-incident optical recording medium compatible with a flying optical head' is not an improvement over the prior art. Applicant claims 'An air-incident optical recording medium compatible with a flying optical head' which is shown

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the rejection of Rosen in view of Lee. Applicant argues the thickness of the substrate cannot be reduced by a factor of more than 600 without degrading the protective function of the substrate. Applicant lacks sufficient support for this deduction.

Applicant argues there is not motivation to combine the teachings of Buckingham and Rosen. It would have been obvious to one of ordinary skill in the art to include the low thermal conductive properties of Rosen in the dielectric and protective layers of Buckingham because Rosen teaches that giving layers high thermal conductivity for heat dissipation purposes is conventional. Applicant argues the combination of Buckingham and Rosen does not teach or suggest an air incident optical recording medium comprising a coating system of layers having a thermal conductivity that maintains the coating system of layers at a temperature that does not cause more evaporation during read and write operations of the same coating system of layers and of molecules adsorbed therein from an ambient atmosphere than absent the read and write operations. Applicant's argument is acknowledged; however, because the claim language, a "coating system of layers having a thermal conductivity that maintains the coating system of layers at a temperature that does not cause more evaporation during read and write operations of the same coating system of layers and of molecules adsorbed therein from an ambient atmosphere than absent the read and write operations" has been maintained as a product by process claim limitation language, the rejection is deemed appropriate and is maintained. Applicant argues there is no motivation to combine the teachings of Rosen and Lee. Rosen and Lee are analogous art because they are from the same field of recording mediums. It would have been

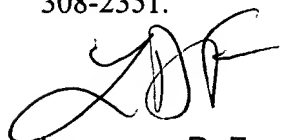
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obvious to one of ordinary skill in the art to incorporate the air bearing assembly with sliding SIL and reduced spot size of Lee to the recording medium of Rosen because Lee teaches that it is known in the art to incorporate this air bearing assembly with recording mediums. Applicant argues Rosen and Lee do not suggest the total thickness of the composition. Based on this argument, claims 21 and 25 have been withdrawn from the Rosen and Lee rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is (703) 305-9978. The examiner can normally be reached on Monday through Friday 8:30 AM – 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on (703) 308-0449. Please allow the examiner twenty-four hours to return your call.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-2351.



Lawrence D. Ferguson
Examiner
Art Unit 1774

CYNTHIA H. KELLY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

